

### **REMARKS**

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-20 are presented in the present application. Claims 1-14 are amended and Claims 15-20 are added by the present amendment.

In the outstanding Office Action, the drawings were objected to; Claims 3-8 and 11-13 were objected to; Claims 1-4 and 7 were rejected under 35 U.S.C. § 102(b) as anticipated by Nakajima et al. (U.S. Patent No. 5,600,948, herein "Nakajima"); Claims 5 and 8-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Nakajima in view of Maus et al. (U.S. Patent No. 5,428,956, herein "Maus"); Claim 14 was rejected under 35 U.S.C. § 103(a) as unpatentable over Nakajima in view of Maus and further in view of Rostrup-Nielsen (U.S. Patent No. 6,109,018); and Claim 6 was rejected under 35 U.S.C. § 103(a) as unpatentable over Nakajima in view of Naber et al. (U.S. Patent No. 5,428,956, herein "Naber").

Regarding the rejection of claim 6, Applicants note that reference Naber has the same Patent Number as Maus which appears to be in error. Therefore, it is not clear whether the examiner intended to reject claim 6 over Nakajima and Naber and thus the reference number for Naber is wrong or the examiner intended to reject claim 6 over Nakajima and Maus. For this reason, Applicants are not able to present meaningful arguments at this stage and respectfully request that the examiner clarifies which references are used for the rejection of dependent claim 6.

The specification has been amended to conform to U.S. drafting practice without adding new subject matter.

Regarding the objection to the drawings, the outstanding Office Action states in numbered paragraph 1 that the figures do not show "series of temperature sensors." Applicants respectfully submit that the originally filed specification specifically discloses at page 7, lines 8-13 "series of sensors" include sensors 60, 61, and 62, all of which are shown in Figure 1. Accordingly, it is respectfully requested this objection be withdrawn.

Regarding the objection to claims 3-7 and 11-13, these claims have been amended as suggested by the outstanding Office Action and to address the noted concerns. No new matter has been added. Accordingly, it is respectfully requested this objection be withdrawn.

Independent claim 1 has been amended to more clearly recite the connections between the various claim elements and also to indicate that a second air distribution valve is fluidly connecting a first area of a combustion chamber to a third area of the combustion chamber as shown, for example, in Figure 1 and as disclosed in the specification, for example, at page 8, lines 9-16. No new matter has been added.

The rejections of the claims on the merits are respectfully traversed for the following reasons.

Briefly recapitulating, amended claim 1 is directed to a controller and regulation system of a combustion unit. The system includes, *inter alia*, a first fuel distribution valve configured to fluidly connect to a combustion chamber and a second air

distribution valve configured to fluidly connect a first area of the combustion chamber to a third area of the combustion chamber.

In a non-limiting example, Figure 1 shows the first fuel distribution valve 20, the combustion chamber 11, the second air distribution valve 21, the first area 12 and the third area 14 of the combustion chamber 11.

Turning to the applied art, Nakajima discloses an engine air-fuel ratio controller configured to control an engine. As shown in Figure 1, air is provided by an intake passage 2 to an engine 1 and the flow of air is regulated by a throttle 9. Fuel is provided by a valve 11 to the engine 1. After the combustion of the fuel and air in engine 1, the resulting gases are eliminated via an exhaust passage 3 in which a catalytic converter 4 is placed. Temperature sensors 6 and 12 are placed at an inlet and an outlet of the catalytic converter 4 to monitor corresponding temperatures.

However, Nakajima does not teach or suggest that the throttle 9 fluidly connects a first area of the engine 1 to a third area of the engine 1 as recited by amended claim 1.

In addition, it is noted that claim 1 specifically recites that an electronic data processing unit regulates an opening of the fuel valve and the air valve to minimize polluting emissions.

On the contrary, Figure 1 of Nakajima shows that throttle 9 is not controlled by the control unit 5, which is asserted by the outstanding Office Action as corresponding to the claimed electronic data processing unit. In this regard, Nakajima specifically

discloses in the paragraph bridging columns 4 and 5 a "throttle 9 for controlling an intake air amount in response to a depression of an accelerator pedal, not shown."

In other words, the throttle 9 of the engine shown in Figure 1 of Nakajima is controlled by the movement of an acceleration pedal and not by the control unit 5 as asserted by the outstanding Office Action. Figure 1 shows that the control unit 5 receives a signal from a throttle opening sensor 9A that indicates the position of the throttle 9 but neither Figure 1 nor the disclosure of Nakajima indicates that the control unit 5 controls the throttle 9.

Accordingly, it is respectfully submitted that amended claim 1 and each of the claims depending therefrom patentably distinguish over Nakajima.

The remaining rejections on the merits of the dependent claims are respectfully traversed as all these rejections are based on Nakajima and, as discussed above, Nakajima does not teach or suggest each element of independent claim 1. In addition, the secondary art relied upon by the outstanding Office Action does not cure the deficiencies of Nakajima discussed above.

Further, with regard to dependent claim 5, it is noted that this amended claim specifically states the position of the first and second pressure sensors, i.e., between a compressor and the combustion chamber or the combustion chamber and a turbine. Similarly, amended dependent claim 7 specifically states the position of temperature sensors in the claimed system. However, none of the applied art discloses the claimed positions of the temperature and pressure sensors.

Regarding dependent claim 8, this claim recites, among other things, that the combustion chamber includes a first area, a second area, and a third area and a catalyst is included in the second area of the combustion chamber.

As discussed above with regard to Nakaijima, a catalytic converter 4 is provided in an exhaust passage 3 and not inside the engine 1 as claimed and shown in Figure 1. Accordingly, the position of the catalytic converter 4 in Nakaijima is different from what is claimed and at least for this reason, dependent claim 8 further distinguishes over Nakaijima.

Regarding dependent claim 9, this claim has been amended to more clearly recite that a third field inlet duct is configured to connect the first fuel distribution valve to an interface between a second area and a third area of the combustion chamber. This feature cannot be found in any of the applied references. Thus, it is respectfully submitted that dependent claim 9 further patentably distinguishes over the applied art.

Regarding dependent claim 14, this claim recites that the combustion chamber is connected to a compressor and a turbine. The outstanding Office Action recognizes on page 6, numbered paragraph 21, that the combination of Nakaijima in view of Maus fails to disclose a turbine and relies on Rostrup-Nielsen for teaching a gas turbine 36 as shown in Figure 1.

However, it is noted that both Nakaijima and Maus are directed to an engine while Rostrup-Nielsen is directed to a gas turbine, which is different from an engine. It is known that an engine does not need a turbine and thus, it is not clear why one skilled in

the art will take a turbine from a gas turbine and add it to an engine as suggested by the outstanding Office Action. In other words, it is not clear while somebody will take a turbine from a power plant to attach it to the engine of a car.

New claims 15-20 have been added to set forth the invention in a various scope and Applicants respectfully submit that these claims find support in the originally filed specification. More specifically, independent claim 15 is similar to claim 1 and claims 16-20 are similar to the pending dependent claims. No new matter has been added. It is believed that the new claims patentably distinguish over the applied art for the reasons discussed above with regard to claims 1-14.

Accordingly, in light of the above discussion and in view of the enclosed amendments, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested. If, however, there are any remaining unresolved issues that would prevent the issuance of the Notice of Allowance, the Examiner is urged to contact the undersigned at (540) 361-2601 in order to expedite prosecution of this application.

Respectfully submitted,  
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